

**WHAT IS CLAIMED IS:**

- 1. A substrate structure with built-in via hole resistors, comprising:  
a core layer, made of an insulating material; and  
a plurality of via holes, penetrating the core layer and to be filled with polymer  
thick film resistor, and a solder ball or a conductive pad being formed on  
both ends of the via hole to provide electrical conductivity.**
- 2. The substrate structure as claimed in Claim 1, wherein the core layer is a  
preprag.**
- 3. The substrate structure as claimed in Claim 2, wherein the core layer further  
comprises a copper foil on top of the film layer.**
- 4. The substrate structure as claimed in Claim 1, wherein the solder ball is made of  
tin, or tin alloy.**
- 5. The substrate structure as claimed in Claim 1, wherein the conductive pad is  
made of metal or metal alloy or a conductive paste.**
- 6. The substrate structure as claimed in Claim 1, wherein the resistance of the via  
hole resistor is adjusted by varying the diameter-length ratio of the via hole,  
which, in turn, varying the amount of the PTFR filled.**
- 7. The substrate structure as claimed in Claim 1, wherein the via holes is filled with  
one or more via hole PTFR to reduce the parasitical inductance generated by  
PTFR with a large diameter-length ratio.**
- 8. The substrate structure as claimed in Claim 7, wherein the equivalent circuit of  
the reducing parasitical inductance has the effect of distributed components that  
is used in a high frequency system to adjust the capacitance and inductance.**

9. A method for manufacturing a substrate with built-in via hole resistors, the method comprising the following steps:
- (a) providing a substrate with metal foils on both sides;
  - (b) performing exposure, print and etching to the metal foil on the top side of the substrate to form the locations on the substrate where the via holes will be drilled;
  - (c) laminating a copper foil and a film on the top side of the substrate;
  - (d) drilling via holes on the copper foil and the film with laser;
  - (e) filling PTFR into the via holes;
  - (f) manufacturing a conductive path; and
  - (g) repeating steps (c), (d), and (f), to manufacture the next layer of the board.
10. The method as claimed in Claim 9, wherein step (e) is a roller printing step.
11. The method as claimed in Claim 9, wherein step (e) is a screen printing step.
12. The method as claimed in Claim 9, wherein step (e) is a stencil printing step.
13. The method as claimed in Claim 9, wherein step (e) is a dispenser printing step.
14. The method as claimed in Claim 9, wherein step (e) is a ink-jet printing step.
15. The method as claimed in Claim 9, wherein a step of filling PTFR between two neighboring pads is after step (b).